

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### Apparatus for Storing and Transferring Fish at Sea

I, ERNST KARL ROSCHER, a German Citizen, of 57, Kirchenallee, Hamburg 1, Germany, do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an apparatus for transferring fish at sea from a trawler to a storage and transport vessel.

Normally, a fishing trawler or other fishing boat is also used for transporting the catch to the landing port. However, if the catching operation can be independent of the transport of the fish, the transport being carried out by a separate vessel, such trawlers may extend their stay at the fishing grounds, thereby saving time and the expense of a number of return voyages to the home port. In addition to reducing the number of voyages to the home port, the necessity is eliminated of providing storage space for the fish and of carrying ice for such storage. The space and the carrying capacity of the holds is thus available for extra fuel capacity or a smaller type of trawler may be used. The transport vessel may be a factory ship for quick freezing and production of fishmeal and liver oil.

In spite of the obvious important economical possibilities of separating the storage and fishing operations between a trawler and a transporting vessel no satisfactory arrangement for such separation has been adopted prior to this invention. This is chiefly due to the difficulties in transferring the catch from a trawler to a transport vessel, for such transfer operations necessarily have to be carried out during both day and night and under all conditions of weather and sea-way. Direct transfer operations also result in the loss of time of the trawler from fishing.

The present invention provides an apparatus which satisfactorily eliminates the difficulties encountered in the transferring of the catch from trawlers to the transport vessel.

[Price 3/-]

Apparatus according to the invention comprises a normally closed floating container acting as a fish storage chamber and constructed of flexible perforated material so as to allow the free flow of seawater into and out of it and having means attached to it for keeping it afloat, means for towing the container at the stern or alongside the trawler, means permitting the transfer of the fish into the container, means for marking the location of the container, when it is set adrift to float independently, and means whereby the container may be fetched in and emptied by the storage and transport vessel.

The container may thus be turned loose and marked by a buoy so that there is no unnecessary drag during trawling operations. When the containers are filled and floating independently, the transport vessel may pick them up out of the water or may merely empty them at sea. With this apparatus, the difficult, time-wasting and dangerous operation of transferring the catch directly from one ship to another is avoided and the loss of fishing time by the trawlers is reduced to a minimum.

In order to limit the number of containers which have to be found while floating independently in the sea, such containers should be as big as is consistent with practical requirements for delivering fish to the transport vessel. For example, their size should be sufficient to take the catch of a twenty-four hour period or, say, about 15 tons of fish. Containers of such size would be too heavy to be thrown overboard and lifted back on board, and it is for this reason that the invention provides that they may be towed alongside or behind the trawler and that the fish may be put into the container from the deck of the trawler after the various hauls are taken up and, if desired, after the fish have been gutted out on the deck of the trawler.

The large floating containers may be made

of netting and are preferably of elongated shape. They may be supported by buoyant bodies, such as air-filled rubber floats.

This type of container will be safe from 5 knocks and blows which may occur as the container is brought or towed alongside the trawler or the transport.

After the floating container has been filled with fish, its tow line is disconnected from 10 the trawler and, at the same time, a marker buoy may be attached to the free end of the tow line of the container. The container may thereafter be allowed to float independently. When the container is to be emptied of its 15 load of fish, the transport will move alongside and pick up, by means of a hook, either the tow line of the container or a large top ring provided on the buoy. The tow line may be reeled through a large opening in 20 the ship's stern and the floating net bag with the fish may then be drawn out of the water and up an inclined ramp onto the ship's deck, somewhat in the same manner as a whale is drawn onto the deck of a whale factory ship. 25 The objects and features of the invention will be more fully appreciated from the following description which will be made in connection with the accompanying drawings, which illustrate by way of example, one embodiment of this invention.

Fig. 1 is a side view of one form of floating fish container and shows the container connected to a trawler;

Fig. 2 is a plan view of the fishing 35 container;

Fig. 3 is a cross section of the container;

Fig. 4 is a plan view of the deck of the trawler and shows the container being towed on one side of the trawler, which side may 40 be opposite to the side upon which the net is carried;

Fig. 5 is a side view of a buoy having signal lights and signs and a ring with which the container may be connected and also 45 having a ring with which a connection may be made with a tow rope from either the trawler or the transport vessel; and,

Fig. 6 is a schematic side view of the rear part of a transport illustrating how the flexible fish container may be pulled aboard the 50 transport vessel through an opening in the stern of the vessel.

Referring to the drawings:—

The fish storage container 1 is made of a 55 flexible net-like material, and is supported by floating members, such as air-filled rubber floats 2 disposed alongside or inside the container. The rear of the container is closed by a rope sling 3, as indicated in Fig. 1, 60 which is released in order to empty fish from the container, and the front portion of the container is narrowed to form an elongated neck 4 through which the fish may be fed into the container. The forward end of the 65 neck 4 is provided with a substantially stiff

mouth ring for holding the throat of the neck portion in an open position, which ring is fixed to a receiving box 9, for directing the fish fed thereto to the container. The box 9 is fastened to the bulwark of the trawler 70 as shown in Figs. 1 and 4. A towing ring 5 is provided at the forward end of the container to receive a tow line 8, and in addition longitudinal ropes 6, which are shown in section in Fig. 3 are connected to the 75 ring 5. The ropes run out from the ring 5 over the surface of the container 1 and are fastened to the network of the container at various points so that the towing strain may be equally distributed over the container. 80 The underside of the container is protected by a matting 7 of fibre or leather, as indicated generally in Fig. 3. By this means, the container is protected against wear and tear due to friction as the heavy container 85 is pulled aboard the deck of the transport vessel.

Figs. 1 and 2 show net partitions 10 and 11 which are spaced at locations along the length of the container. These partitions are for 90 the purpose of sub-dividing the container into a number of compartments in order to avoid the concentration of the full load of fish in any portion of the container and thereby to distribute the load throughout the con- 95 tainer. Each of the partitions is made as a flap which may be opened or closed by rope slings operated from the deck of the trawler while the bag or container is being towed alongside the trawler. At the begin- 100 ning of the loading operation, the partitions 10 and 11 are opened to allow the fish, which are initially fed into the container to pass from the front to the rear end of the bag. The movement of the fish in the container is 105 effected by the water moving through the container as the vessel moves forward. As soon as the rear portion of the container is sufficiently filled, it is closed off from the rest of the container by the operation of the 110 rope slings which close the partition 10 and the fish are thus prevented from moving aft in the container. Similarly, when the central portion of the container is sufficiently filled with fish, the partition 11 is closed to shut 115 off that portion of the container from the front portion. Finally the neck 4 is closed by means of a rope sling and the container is disconnected from the vessel. The partitions 10 and 11 ensure that the weight of 120 the fish is distributed substantially uniformly over the entire length of the container so that the container may be more safely and more easily pulled on to the deck of the transport vessel.

Fig. 5 illustrates a marker buoy for use 125 with the container. The buoy is provided with a lower ring 12 for connection with the tow line 8 of the container and is also provided with a top ring 13 for easy pick-up 130

and for connection to means for fetching in the buoy from the transport vessel and for pulling the container out of the water on to the deck of the transport vessel. The buoy 5 is also provided with a signal light 14 fed by an electric or gas supply and also has a day signal or sign 15 so that the position of the buoy may be readily ascertained both at night and during the daytime. In order to 10 assist in the location of the buoy, it may also be advisable to use sound signals.

It will be appreciated from the above description that this invention provides a means by which trawlers may operate without providing transport facilities aboard the trawler 15 for carrying the fish obtained by the operations of the trawler. Furthermore, the invention extends the time the trawler can remain in the fishing ground and provides an economical manner of storing great quantities of fish which can be picked up periodically by a transport vessel and be brought to port. It will be appreciated also that the fish container of this apparatus has the advantage that 20 it may be readily filled and emptied and that the container provides an efficient means for distributing the load of the fish throughout the container so that the container may be more readily handled when being drawn 30 aboard the transport vessel.

I desire to have it understood that the structure disclosed above is only illustrative and may be modified within the scope of the claims.

35 What I claim is:—

1. Apparatus for transferring fish from a trawler to a storage and transport vessel in the open sea comprising a normally closed floating container acting as a fish storage 40 chamber and constructed of flexible perforated material so as to allow the free flow of seawater into and out of it and having means attached to it for keeping it afloat, means for towing the container at the stern 45 or alongside the trawler, means permitting the transfer of the fish into the container, means for marking the location of the container, when it is set adrift to float independently, and means whereby the container may 50 be fetched in and emptied by the storage and transport vessel.

2. Apparatus as claimed in Claim 1, wherein the container is made of netting.

3. Apparatus as claimed in Claim 1 or 55 Claim 2, wherein the means for keeping the container afloat consist of gas-tight balloons of flexible material, filled with a gas.

4. Apparatus as claimed in any of the preceding claims, wherein the container has, 60 at its forward end, an elongated neck which is adapted to be connected to the trawler to permit the transfer of fish into the container

and which is adapted to be closed to prevent the escape of fish therefrom.

5. Apparatus as claimed in any of the 65 preceding claims, wherein the container is of elongated shape and has releasable means for opening and closing its rear end.

6. Apparatus as claimed in Claim 5, wherein means are provided for dividing the 70 container into a number of compartments and wherein the said means are operable from the deck of the trawler while towing the container.

7. Apparatus as claimed in Claim 5 or 75 Claim 6, wherein the container is provided with a towing ring or eye at its forward end, the ring or eye being connected to a plurality of ropes which run the length of the container and which are connected to the con- 80 tainer at a plurality of points so as to spread the towing strain over the container.

8. Apparatus as claimed in any of the preceding claims, wherein the means for marking the location of the container com- 85 prises a marking buoy which permits the container to float independently at sea without being lost.

9. Apparatus as claimed in Claim 8, wherein the marking buoy is connected to 90 the container by a tow-rope whereby the container can be drawn out of the water over an inclined ramp on to the deck of the storage and transport vessel.

10. Apparatus for transferring fish from a 95 trawler to a storage and transport vessel in the open sea, comprising a normally closed floating container, acting as fish storage chamber, constructed of flexible perforated material and having means attached to it 100 for keeping it afloat and having a neck portion, means aboard the trawler for receiving the end of the neck portion outside the trawler in such a manner that the neck portion is available for filling the container with 105 fish from the deck of the trawler, tow means for connecting the container to the trawler, a marking buoy to be connected to the container when the latter is set adrift to float independently, means for fetching in the buoy 110 from the transport vessel and means for pulling the container out of the water onto the deck of the transport vessel.

11. Apparatus for transferring fish from a trawler to a storage and transport vessel 115 in the open sea, substantially as described with reference to the accompanying drawings.

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**This drawing is a reproduction of the Original on a reduced scale.**

